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| 10/658,775 | 09/10/2003 | Shaoming Liu | 117122 | 3902 |

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| EXAMINER | |
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| JONES, DANELLE E | |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/658,775 | LIU, SHAOMING | |
| | Examiner | Art Unit | |
| | Danelle E. Jones | 2626 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *10 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/4/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

***Double Patenting***

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1 and 4 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 10658812.

3. Although the conflicting claims are not identical, they are not patentably distinct from each other because removing inherent and/or unnecessary limitations/step in the claims would be within the level of one of ordinary skill in the art. It is well settled that the omission of a step/element, e.g. "**allotting case information to the edge of an R tree, etc**.", and its function is an obvious expedient if the remaining elements/steps perform the same function as before. *In re Karlson, 136 USPQ 184 (CCPA 1963).* Also note Ex parte Rainu, *168 USPQ 375 (Bd. App. 1969).* Omission of a reference element or step whose function is not needed would be obvious to one of ordinary skill in the art.

4. This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Algorithms for Computing the Distances between Unordered Trees, Shaoming Liu and Eiichi Tanaka (referred to as Liu) in view of Dolan et al. US6,871,174.

Regarding **claims 1 and 13**, Liu discloses a comparison method (see Summary) comprising:

calculating a distance between the first R tree and the second R tree on the basis of a distance between two R trees, which is defined at least in accordance with a condition of a mapping between vertexes of the two R trees (see Summary);

and calculating a distance between the first text sentence and the second text sentence on the basis of the calculated distance between the first R tree and the second R tree (see Summary, examiner interprets calculating a distance between the first text

sentence and the second text sentence as calculating a distance between the two R-trees since the sentences are represented as R-trees).

Although Liu discloses a comparison method, Liu does not specifically disclose a text sentence comparison method comprising converting a first text sentence and a second text sentence into a first R tree and a second R tree, respectively;

However these features are well known in the art as evidenced by Dolan et al. Dolan et al. discloses a text sentence comparison method (see col. 2, lines 57-59), converting a first text sentence and a second text sentence into a first R tree and a second R tree, respectively (see col. 2, lines 55-59 and col. 4, lines, where a logical graph is interpreted by the examiner as an R-tree – see col. 4, lines 8-11 and the textual segments are sentences-see col. 4, lines 5-7) to identify a relationship between two textual segments (see col. 2, lines 57-59). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made, to represent textual sentences as R-trees for comparison using Liu's method of comparison.

Regarding **claim 2 and 16,** the limitations of claims 1 and 15 have been met as discussed above. Liu discloses, wherein in the calculation of the distance between the first R tree and the second R tree: a distance between a forest, which the first R tree includes, and a forest, which the second R tree include (see page 89, Fig. 1 and page 91 paragraphs 9-12);

a distance between a subtree, which the first R tree includes, and a subtree, which the second R tree includes; and a vertex mapping weight of a mapping from the first R tree to the second R tree; are calculated (see page 89 Fig. 1 and page 92 paragraph 2).

Regarding **claims 3 and 17,** the limitations of claims 2 and 16 have been met as discussed above. Liu discloses the vertex mapping weight calculated on the basis of word substitution weight, word deletion weight, and word insertion weight (see page 90, paragraph 14).

Liu does not disclose the text sentence comparison method according to claim 2, wherein: in the conversion: words included in the first text sentence is allotted to vertexes of the first R trees; and words included in the second text sentence is allotted to vertexes of the second R trees. However this feature is well known in the art as evidenced by Dolan et al. Dolan et al. discloses the conversion where words included in the first text sentence is allotted to vertexes of the first R trees; and words included in the second text sentence is allotted to vertexes of the second R trees (see col. 2, lines 63-65, where the first logical represents a textual input, interpreted as the first sentence and the second graph represents information in a lexical knowledge base interpreted as the second sentence) to identify a relationship between two textual segments. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Dolan et al. with Liu to compare two sentences.

Regarding **claims 4 and 18**, the limitations of claims 2 and 16 have been met as discussed above. Liu discloses the vertex mapping weight is calculated on the basis of word substitution weight, word deletion weight, word insertion weight, case substitution weight, case deletion weight, and case insertion weight (see page 90 paragraph 14). Liu does not disclose the text sentence comparison method according to claim 2, wherein: in the conversion: word information and case information of the first text sentence are allotted to vertexes of the first R trees; and word information and case information of the second text sentence is allotted to vertexes of the second R trees. However this feature is well known in the art as evidenced by Dolan et al. Dolan et al. discloses the conversion where word information and case information included in the first text sentence is allotted to vertexes of the first R trees; and word information and case information included in the second text sentence is allotted to vertexes of the second R trees (see col. 2, lines 63-65, where the first logical represents a textual input, interpreted as the first sentence and the second graph represents information in a lexical knowledge base interpreted as the second sentence and col. 4, lines 8-11 where syntactic and semantic information is provided) to identify a relationship between two textual segments. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Dolan et al. with Liu to compare two sentences.

Regarding **claims 5 and 19,** the limitations of claims 1 and 15 were met as discussed above. Liu discloses setting the condition of the mapping between the two R trees (see

page 91 paragraph 11).

Regarding **claims 6 and 20**, the limitations of claims 1 and 15 have been met as discussed above. Liu discloses wherein the condition of the mapping between the two R trees includes: the mapping is a one-to-one mapping (see page 90, Fig. 2 where the mappings of the vertexes shown are one to one); the mapping preserves parent-child relationship (see summary where the algorithm disclosed is based on structure preserving mapping, thus the parent-child relationship is preserved; and the mapping preserves structure (see Summary where the algorithm disclosed is based on structure preserving mapping).

Regarding **claims 7 and 21**, the limitations of claims 1 and 15 are disclosed as discussed above. Liu discloses outputting the calculated distance between the first text sentence and second text sentence (see Summary where the algorithms output distance calculation between two R-trees, which represent two sentences). Liu does not disclose inputting the first text sentence and the second text sentence; and outputting the calculated distance between the first text sentence and the second text sentence. However this feature is well known in the art as evidenced by Dolan et al. who discloses representing two sentences as logical graphs, where the sentences must be input to be represented as logical graphs (see col. 2, lines 57-59). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Dolan et al. with Liu to compare two sentences

Regarding **claims 8 and 22**, Liu discloses a comparison method (see Summary) comprising:

calculating a distance between the first RO tree and the second RO tree on the basis of a distance between two RO trees, which is defined at least in accordance with a condition of a mapping between vertexes of the two RO trees (see Summary);

and calculating a distance between the first text sentence and the second text sentence on the basis of the calculated distance between the first RO tree and the second RO tree (see Summary, examiner interprets calculating a distance between the first text sentence and the second text sentence as calculating a distance between the two RO-trees since the sentences are represented as RO-trees).

Although Liu discloses a comparison method, Liu does not specifically disclose a text sentence comparison method comprising converting a first text sentence and a second text sentence into a first RO tree and a second RO tree, respectively;

However these features are well known in the art as evidenced by Dolan et al. Dolan et al. discloses a text sentence comparison method (see col. 2, lines 57-59), converting a first text sentence and a second text sentence into a first RO tree and a second RO tree, respectively (see col. 2, lines 55-59 and col. 4, lines, where a logical graph is interpreted by the examiner as an R-tree – see col. 4, lines 8-11 and the textual segments are sentences-see col. 4, lines 5-7) to identify a relationship between two textual segments (see col. 2, lines 57-59). Thus it would have been obvious to one of

ordinary skill in the art at the time the invention was made, to represent textual sentences as R-trees for comparison using Liu's method of comparison.

Regarding **claim 9 and 23,** the limitations of claims 8 and 22 have been met as discussed above. Liu discloses, wherein in the calculation of the distance between the first RO tree and the second RO tree: a distance between a forest, which the first RO tree includes, and a forest, which the second RO tree include (see page 89, Fig. 1 and page 91 paragraphs 9-12);
a distance between a subtree, which the first RO tree includes, and a subtree, which the second RO tree includes; and a vertex mapping weight of a mapping from the first RO tree to the second RO tree; are calculated (see page 89 Fig. 1 and page 92 paragraph 2).

Regarding **claims 10 and 24,** the limitations of claims 9 and 23 have been met as discussed above. Liu discloses the vertex mapping weight calculated on the basis of word substitution weight, word deletion weight, and word insertion weight (see page 90, paragraph 14).
Liu does not disclose the text sentence comparison method according to claim 2, wherein: in the conversion: words included in the first text sentence is allotted to vertexes of the first RO trees; and words included in the second text sentence is allotted to vertexes of the second RO trees. However this feature is well known in the art as

evidenced by Dolan et al. Dolan et al. discloses the conversion where words included in the first text sentence is allotted to vertexes of the first RO trees; and words included in the second text sentence is allotted to vertexes of the second RO trees (see col. 2, lines 63-65, where the first logical represents a textual input, interpreted as the first sentence and the second graph represents information in a lexical knowledge base interpreted as the second sentence) to identify a relationship between two textual segments. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Dolan et al. with Liu to compare two sentences.

Regarding **claims 4 and 18**, the limitations of claims 2 and 16 have been met as discussed above. Liu discloses the vertex mapping weight is calculated on the basis of word substitution weight, word deletion weight, word insertion weight, case substitution weight, case deletion weight, and case insertion weight (see page 90 paragraph 14). Liu does not disclose the text sentence comparison method according to claim 2, wherein: in the conversion: word information and case information of the first text sentence are allotted to vertexes of the first RO trees; and word information and case information of the second text sentence is allotted to vertexes of the second RO trees. However this feature is well known in the art as evidenced by Dolan et al. Dolan et al. discloses the conversion where word information and case information included in the first text sentence is allotted to vertexes of the first RO trees; and word information and case information included in the second text sentence is allotted to vertexes of the second R trees (see col. 2, lines 63-65, where the first logical represents a textual input,

interpreted as the first sentence and the second graph represents information in a lexical knowledge base interpreted as the second sentence and col. 4, lines 8-11 where syntactic and semantic information is provided) to identify a relationship between two textual segments. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Dolan et al. with Liu to compare two sentences.

Regarding **claims 12 and 26,** the limitations of claims 8 and 22 were met as discussed above. Liu discloses setting the condition of the mapping between the two RO trees (see page 91 paragraph 11).

Regarding **claims 13 and 27**, the limitations of claims 8 and 22 have been met as discussed above. Liu discloses wherein the condition of the mapping between the two R trees includes: the mapping is a one-to-one mapping (see page 90, Fig. 2 where the mappings of the vertexes shown are one to one); the mapping preserves parent-child relationship (see summary where the algorithm disclosed is based on structure preserving mapping, thus the parent-child relationship is preserved; and the mapping preserves structure (see Summary where the algorithm disclosed is based on structure preserving mapping).

Regarding **claims 14 and 28**, the limitations of claims 8 and 22 are disclosed as discussed above. Liu discloses outputting the calculated distance between the first text

sentence and second text sentence (see Summary where the algorithms output distance calculation between two RO-trees, which represent two sentences). Liu does not disclose inputting the first text sentence and the second text sentence; and outputting the calculated distance between the first text sentence and the second text sentence. However this feature is well known in the art as evidenced by Dolan et al. who discloses representing two sentences as logical graphs, where the sentences must be input to be represented as logical graphs (see col. 2, lines 57-59). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Dolan et al. with Liu to compare two sentences

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Danelle E. Jones whose telephone number is 571-270-1241. The examiner can normally be reached on M-F 7:30am - 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on 571-272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RICHEMOND DORVIL
SUPERVISORY PATENT EXAMINER

DJ
5/10/07

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